# STRUCTURE AND METHOD OF FABRICATION FOR A LIGHTING DEVICE


Abstract of the Disclosure

A lighting device suitable for low power applications, such as backlighting a liquid crystal display (LCD), includes plural light emitting components and photovoltaic elements formed on a monocrystalline silicon substrate. To fabricate the lighting device, high quality epitaxial layers of monocrystalline materials can be grown overlying the silicon substrate by forming a compliant substrate for growing the monocrystalline layers. One way to achieve the formation of a compliant substrate includes first growing an accommodating buffer layer on a silicon wafer. The accommodating buffer layer is a layer of monocrystalline oxide spaced apart from the silicon wafer by an amorphous interface layer of silicon oxide. The amorphous interface layer dissipates strain and permits the growth of a high quality monocrystalline oxide accommodating buffer layer. The accommodating buffer layer is lattice matched to both the underlying silicon wafer and the overlying monocrystalline material layer.